

# Superficial Epithelioma of the Covered Parts of the Body

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## SUMMARY

*In individuals with primary cutaneous epithelioma there may be a widespread predisposition of the basal cell layer of the epidermis toward the production of growths of this type. The differential diagnosis usually can be made on clinical characteristics, but in some instances differentiation is difficult and a correct diagnosis may be reached only by microscopic examination of the tissue.*

*The radioresistance of this type of epithelioma is emphasized and the selection of the proper method of treatment is discussed.*

*Consideration of the factors of (1) size and location of the lesion, (2) age, and (3) general condition of the patient may result in a decision that, in some cases, no treatment is indicated. Biochemical, cytological and pathological studies of basal cell epithelioma might lead to a clearer understanding of the nature of epitheliomas in general.*



Figure 1.—Typical superficial basal cell epithelioma. Left, arm and back; right, close-up of arm lesion.

ward healing in the center is often noted. In addition to superficial basal cell epitheliomas, other types of superficial carcinomas are recognized, namely, Paget's disease of the nipple, Bowen's squamous cell epithelioma in situ, and the basosquamous type.

## II. Incidence

In a recent analysis of a large series of cutaneous lesions, Sutton<sup>13</sup> found an incidence of 2.07 per cent of the superficial type of carcinoma. It is of interest to note that in his series of 560 cases, 95 per cent of the patients had basal cell epitheliomas on the head and neck and 3 per cent had lesions on the trunk. Tables 1 and 2 show the incidence and distribution of lesions found in the University of California Visible Tumor Clinic during the past ten years. It is noted that in this series of 487 basal cell lesions, 1.64 per cent were of the superficial or "body basal" variety. Basal cell epitheliomas of all types occurring on the trunk constituted 22 or 4.5 per cent of the total. Multiple lesions were present in 75 per cent of the cases. Seven of the eight patients treated by the author were females. Little<sup>4</sup> also found a preponderance of lesions in the females.

## III. Nomenclature

Various terms have been employed to designate this group of superficial neoplasms. Little<sup>4</sup> described them as "erythematoid benign epitheliomas." Wise<sup>14</sup> preferred to call them "multiple superficial benign epitheliomas of the trunk." Other designations given the growths by various writers include: carcinoid of the skin, Bowen type epithelioma, Pagetoid epithelioma, and carcinoma cutis multiformis. The entire subject was greatly clarified in an excellent report by Montgomery<sup>10</sup> in 1929. He chose the term superficial epitheliomatosis and included under it, basal cell, squamous cell, and

**B**ASAL cell epithelioma is a common skin neoplasm usually on the face and neck and occasionally on the covered parts of the body. Various kinds are recognized, such as the rodent ulcer, nodular, cystic, sclerosing, morphea-like, pigmented, and the superficial type. This paper will be confined to a discussion of the superficial variety.

Primary cutaneous carcinomas are classified by MacLeod and Muende<sup>6</sup> as follows:

1. Basal cell—rodent ulcer group.
2. Prickle cell.
3. Mixed, metatypical or baso-squamous cell.
4. Intra-epidermal.

## I. Clinical Characteristics of Superficial Basal Cell Epithelioma

Superficial basal cell epitheliomas occur most often on the trunk, arms, and thighs. They are usually multiple, as many as 200 lesions having been reported in a single case. The lesion appears as a superficial, dry, erythematous scaling plaque with a sharply defined, slightly elevated, threadlike waxy edge (Figure 1). They vary in size from a few millimeters in diameter to 30 cm. or more, and are usually oval or circinate in form. A tendency to-

Presented before the Section on Dermatology and Syphilology at the 77th Annual Session of the California Medical Association, San Francisco, April 11-14, 1948.

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baso-squamous or mixed cell intra-epidermal epitheliomas. Andrews<sup>2</sup> described them as intra-epidermal and multicentric epitheliomas.

Inasmuch as the large majority of these superficial epitheliomas are of the basal cell type rather than squamous cell or mixed, most of the present discussion will concern the former. However, it must be emphasized that although the intra-epidermal squamous cell tumors constitute the minority, the danger of them to the individual is potentially the greatest by virtue of their capacity for metastasis. Conversely, the body basal cell type is extremely slow-growing, rarely ulcerates, and probably never metastasizes or results in death of the individual. Certain clinical and histopathological features render the intra-epidermal and multicentric basal cell tumors analogous to other basal cell epitheliomas, and for this reason it is deemed better to designate them as such.

#### IV. Etiology

These relatively benign epitheliomas originate in apparently normal skin and are not preceded by nevi, verrucae, keratoses or other possible pre-cancerous conditions. Many of the patients who have such lesions also have one or more ordinary basal or squamous cell epitheliomas, especially on the head and neck, at some time during their life. Some writers favor a theory of congenital pre-

disposition and classify the condition among the nevoid dermatoses.<sup>14</sup> Anderson<sup>1</sup> is of the opinion that arsenic is the causative agent in the majority if not all cases of this condition. He has presented a convincing study to show that a history of the ingestion of arsenic can usually be elicited from these patients and he demonstrated the presence of

TABLE 2.—Analysis of Cases of the University of California Visible Tumor Clinic

Number of cases of basal cell epithelioma.....	487	
Number of cases of basal cell epithelioma on the trunk (all types) .....	22	4. 5%
Males .....	10	
Females .....	12	
Number of cases of superficial basal cell epitheliomas .....	8	1.64%
Location of lesions:		
Interscapular .....	2	
Scapular .....	4	
Anterior chest .....	1	
Upper arm .....	3	
Hip .....	1	
Abdomen .....	3	
Lower back .....	2	
Thigh .....	1	
Inguinal .....	1	
Cases with multiple lesions.....	6	
Cases with single lesions.....	2	
Other types of epithelioma in patient.....	3	
History of arsenic ingestion.....	3	

TABLE 1.

Case No.	Sex & Age	No. of Lesions	Location of Lesions	Duration of Lesions	Other Types of Epith. in patient	History of Arsenic	Histopath.
1.	F65	2	Interscapular Scapular	5 years	Multi-epith. squam. and basal on face and neck	Potarsenite Sod. caco. 1917	Multicentric basal cell epithelioma
2.	F72	5	Lower back Buttocks Abdomen Upper arm	15 to 20 years	Epith. squam. of tongue		Multicentric basal cell epith. and mixed intra-epidermal sq. cell epith.
3.	M55	5	Ant. chest Upper arms Abdomen Thigh	20 years		Fowler's solution for 2 yrs. at age 35 for psoriasis	Multicentric and intra-epidermal basal cell epith.
4.	F49	12	Scapular Inguinal Abdomen Ant. chest	3 years		Urine determination + for As in Feb., 1942	Multicentric basal cell epith.
5.	F84	1	Scapular	4 years			Multicentric basal cell epith.
6.	F63	1	Scapular	2 years			Multicentric basal cell epith.
7.	F69	3	Lower neck Interscapular Lower back	3 years	Post-auricular epith. basal. Ca cervix	Psoriasis for years. No history of As	Neck and post auric. epith. basal. Back lesions. Multicentric epith. basal
8.	F63	2	Upper arm Ant. ankle	20 years 5 years		Fowler's solution for 5 yrs. at age 23 for "nerves"	Multicentric basal cell epith. (arm). Intra-epidermal squam. cell epi. ankle

abnormal amounts of the element in the lesions of patients he treated. Furthermore, in addition to the presence of superficial epitheliomas on the trunk, some of his patients presented typical arsenical keratoses elsewhere. No attempt was made in the cases treated by the author to demonstrate the presence of arsenic in the tissues, blood, or urine.

Piper<sup>12</sup> expressed the belief that the relative frequency of this type of epithelioma in psoriasis is due to chronic irritation which stimulates growth of the inherent germ anlage. He felt that tar medications, roentgen-ray treatment, and arsenicals might be causative factors, but at the same time he conceded that the correlation might be purely coincidental.

Montgomery<sup>11</sup> offered the opinion that arsenic may accelerate latent or dormant cutaneous malignant foci of the skin. He believed that individual sensitivity or susceptibility to arsenic must be considered.

Johnson<sup>3</sup> recently emphasized the fact that the type of carcinoma occurring on the covered parts of the body differs from that on the exposed parts. It would seem that the protection afforded the skin by clothing may in some way affect or influence the development and character of these epitheliomas. Actinic rays, wind and weather are apparently not factors as in the case of carcinomas developing in exposed skin, nor does trauma appear to bear any relationship to their origin.

### V. Histopathology

All types of cutaneous epitheliomas commence intra-epidermally, and in typical intra-epidermal cancers the basal cells proliferate upwards and sideways into the prickle cell layer. The rete pegs are thereby broadened and the thickness of the epidermis is increased. In the early stages the basal cell layer remains intact, but later the basal cells grow as solid masses into the upper cutis or assume an alveolar pattern to simulate one of the skin appendages. Often there are multiple points of origin for these masses in the epidermis, and such lesions have been designated multicentric basal cell epitheliomas (Figure 2). Mitotic figures are present but seldom numerous. There is usually a slight plasma cell and lymphocytic infiltration in the upper cutis. At times there is a tendency for fibrous tissue to encapsulate the growths. Madsen<sup>7, 8</sup> concluded that the tumor starts at a central point from which it spreads continuously in a radial pattern along the interpapillary processes of the epidermis. From a study of horizontal serial sections on 18 cases, he concluded that the epitheliomas are unicentric—there being no evidence that the tumor at onset has not consisted of one epithelioma located in some point in the interpapillary processes. Other writers, notably Montgomery and Wise<sup>10, 14</sup> have shown multiple points of origin from the basal cells of the epidermis. Less often the nests of abnormally proliferating cells are of prickle cell (Figure 3) or baso-squamous cell origin, in which instances the

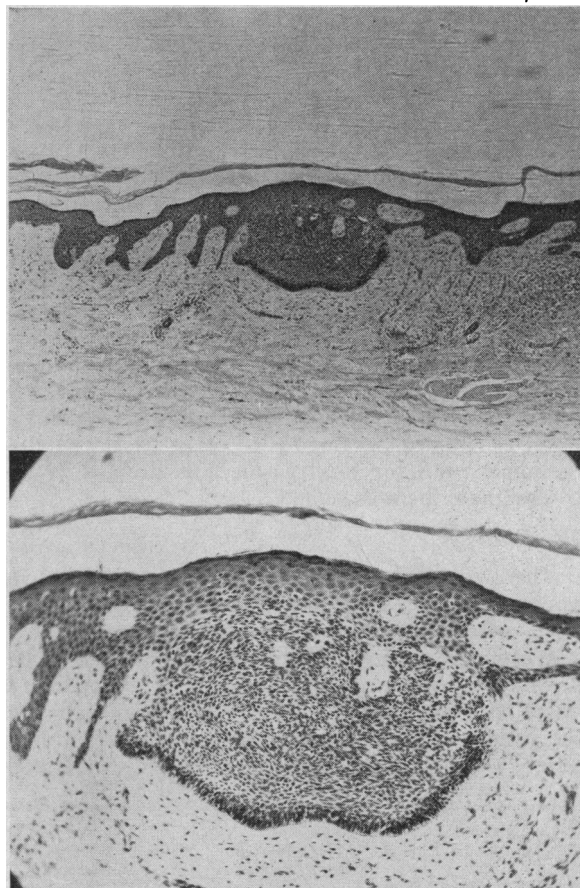


Figure 2.—Photomicrograph of multicentric basal cell epithelioma. Top, lower power; bottom, high power.

growth may terminate as a squamous cell epithelioma.

In all eight cases in the author's series the lesions were multicentric in pattern; one patient (Case 2 in Table 1), in addition, had mixed and intra-epidermal squamous cell involvement; two patients (No. 3 and No. 8) had intra-epidermal basal cell and squamous cell activity, respectively. It was observed that the various types of tumor cell activity, that is, multicentric, intra-epidermal basal or squamous cell, and mixed cell may occur alone in different lesions on the same patient, or, in some instances, may be combined in the same histopathological section.

### VI. Diagnosis

The differential diagnosis includes psoriasis, chronic discoid lupus erythematosus, late syphilis of the skin, eczematoid dermatoses, chronic granulomas, superficial and deep fungus infections of the skin, keratoses, epitheliomas secondary to other causes (such as radiodermatitis), or xeroderma pigmentosa, and intra-epidermal squamous cell epitheliomas (such as Paget's disease of the nipple), and Bowen's squamous cell epithelioma. The intra-epidermal squamous cell lesions frequently are moist and eczematous but not invariably so. One of our

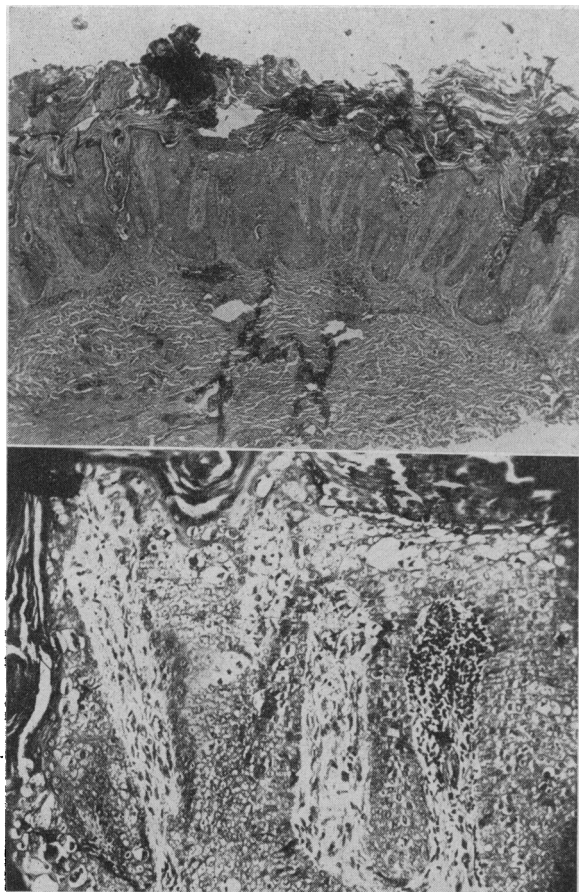


Figure 3.—Photomicrograph of intra-epidermal squamous cell epithelioma. Top, low power; bottom, high power.

patients (Case 8) had a lesion on the ankle of five years' duration which clinically suggested superficial basal cell epithelioma. Histopathologic study revealed a typical intra-epidermal squamous cell epithelioma (Figure 3).

The conditions noted in the preceding paragraph are usually readily distinguished and the lack of the typical threadlike border in all of them is a valuable diagnostic point. At times, psoriasis may be difficult to differentiate from superficial epithelioma especially when the two coexist. In this instance, as well as in the case of intra-epidermal squamous or mixed cell epithelioma, microscopic examination of the tissue is essential for a correct diagnosis, since clinically they may be identical.

## VII. Treatment

Four different methods of treatment are available, namely: (1) electrosurgical; (2) surgical; (3) irradiation; (4) chemosurgical.

1. *Electrosurgical*: For the majority of lesions, this is perhaps the method of choice. The author's experience has been limited to the use of the curette, fulguration and desiccation. For small lesions, this has been a satisfactory method except in the sternal area where in one instance delayed healing was encountered. The cosmetic result from this type of therapy is usually excellent.

2. *Surgical excision*: This method is preferable for large lesions. Also, in the case of certain lesions occurring on the anterior chest (sternal area), the most satisfactory results are achieved by this approach. In some instances, a skin graft is necessary to cover the defect.

3. *Irradiation*: Included here are x-ray, radium and radioactive elements, such as  $P_{32}$  (radioactive phosphorus). The cells producing these growths are highly differentiated and this would seem to account for their apparent radioresistance. This fact, together with the tendency for the lesions to attain a large size, indicates that this type of epithelioma does not lend itself well to irradiation therapy. The author's experience confirms the conclusions, reached by other observers, that undesirable late radiation effects may result if a dosage sufficient to eliminate the growth is given. Low-Beer<sup>5</sup> has shown that the biological depth effect on the skin of beta radiation from externally applied  $P_{32}$  during the acute phase (bullous epidermolysis) of the reaction, extends to 5 mm. In the late phase (215th day) the reaction was detectable to a depth of 2 mm. Inasmuch as strands of tumor cells may extend beyond this depth, and considering the mature type of cell involved, this method is not believed to be generally desirable.

4. *Chemosurgical*: In the past, trichloroacetic acid combined with curettage has been employed with success. However, the results of the method are uncertain and it is not suitable for large lesions. It is possible that these tumors would lend themselves well to treatment by the method advocated by Mohs.<sup>9</sup> This method is a combination of chemical fixation of the tissue in vivo and surgical excision. The entire technique is controlled by histopathological examination of all excised tissue, thereby insuring that all of the tumor and its ramifications are removed. So far as is known, superficial epitheliomas have not as yet been treated in this manner.

## VIII. Discussion

Treatment failures have resulted from electrosurgical, surgical, and irradiation methods. Not all such failures can be attributed to the allowance of an inadequate margin surrounding the lesions, or to insufficient depth of destruction or removal. It is believed that the tendency toward the development of these epitheliomas may be widespread in certain individuals, and that since incipient lesions are only microscopically detectable, some "recurrences" are actually new lesions not previously clinically apparent. In many instances a cure can be effected by complete removal of the tumor with an adequate margin of surrounding normal tissue. A microscopically controlled technique should prove of great value in this respect and further studies should be made utilizing such a method.

The multicentric origin of many of these lesions seems to indicate a widespread predisposition on the part of the epidermis to proliferate in this manner in some individuals.

Experience in one case (No. 4 in Table 1) well illustrates this tendency. Approximately one year after the excision of a large lesion on the upper back, just to the left of the mid-line, a new lesion appeared about 4 cm. below the tip of the scar. This was not considered to be a recurrence. An area of normal appearing skin on the left lower back was chosen for biopsy. The area chosen was approximately 10 cm. from any previously involved skin. Histopathological study of the tissue showed a definitely abnormal character of the basal cell layer. The lack of uniformity of the cells and their tendency toward uncontrolled proliferation were apparent (Figure 4). The observation of persons who produce large numbers of basal cell epitheliomas would also indicate that a constitutional tendency may be present.

It is not believed that the ingestion of arsenic can account for the development of these lesions in all individuals. None of the eight patients in the author's series presented keratoses, pigmentation or other objective evidence of previous arsenic ingestion. However, as several had a history of prolonged ingestion of Fowler's solution, the possibility occurs that some patients who received arsenic internally for psoriasis in years past might actually have had superficial epitheliomas initially rather than psoriasis.

It does seem that a step might be made toward a clearer understanding of epithelial neoplasms in general by exhaustive cytological, pathological and biochemical studies of this type of skin tumor. Here are epithelial cells, not entirely malignant but more or less attenuated, whose growth processes might

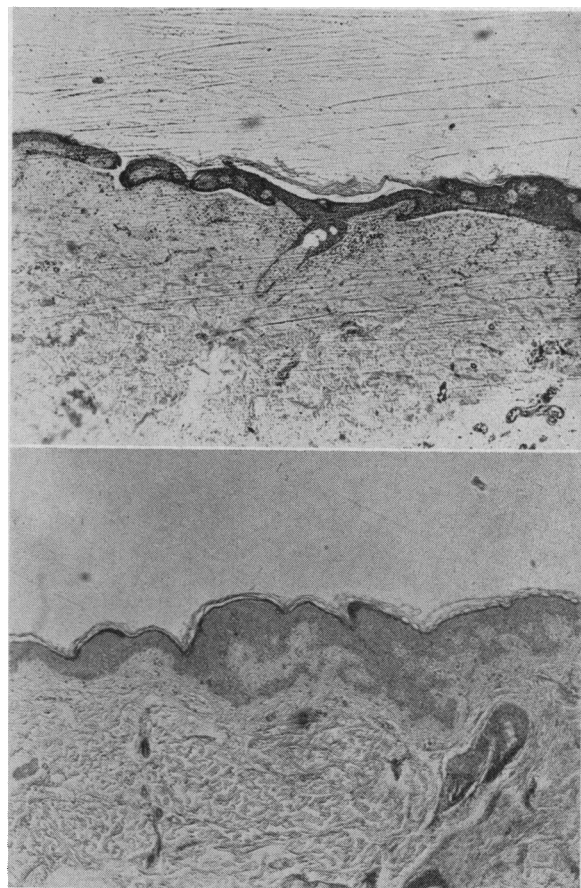


Figure 4.—Photomicrographs of grossly normal skin in vicinity of superficial basal cell epitheliomas. Top, Case 7 in Chart 1; bottom, Case 5.

TABLE 3.

Case	X-Ray	P <sub>22</sub>	Curette and Desiccation	Excision
1. None	None		Feb. 1940. Recurred at edge of scar. May 1941: C & D repeated. No recurrence after 7 years	None
2. None	None	None	All treated with satisfactory result after 1 year	None
3. 5,100 r—right arm lesion, 1943. Now marked telangiectasia and atrophy		Equiv. 2,000 r to lesion on left chest. Failed to respond in 6 months	Ant. chest. 1943. Failed to heal in 6 months.	Previously treated ant. chest lesion excised and grafted with satisfactory result after 1 year
4. 1939-40. L. scapular lesion failed to respond. Dosage not known			1944. 2 back and 2 chest lesions. 1944: L. scapular lesion recurred in 1944. 1948: 3 small lesions on lower back	Scapular lesion excised 1944. 7 of recurrence. 1947: biopsy inconclusive. 5 or 6 new match head to pea-sized lesions on lower mid-back and flank.
5. No treatment because of patient's age				
6. None	None	None	August 1941. Good result	None
7. None		Sept. 1944. Activity, Dec. 1946. Lesion then excised.	1943 — Recurred — lesion then excised	1944: Excision; recurred in 1946. 1946: all excised with satisfactory results to date, Jan. 1948.
8. No treatment as yet.				

be studied with a view to solving at least a part of the mystery of epitheliomas.

At times the very important question of the necessity for treatment must be carefully considered inasmuch as the body basal cell epithelioma is relatively benign. Advanced age and poor general health of the patient, together with the size and location of the lesions in certain instances, might result in a decision that no treatment is indicated.

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#### Discussion by L. H. WINER, M.D., Beverly Hills

There is so little to add to Dr. Harding's presentation that I may be forgiven for reemphasizing some of the points he has made.

Intra-epidermal prickle cell carcinoma and superficial basal cell epitheliomatosis are clinically similar in that they involve the same sites. They have a prolonged course of years without change of appearance. They are superficial plaques and show very slight tendency to ulcerate.

Bowen's disease and intra-epidermal squamous cell carcinoma show definite histologic characteristics. These are:

(1) flattening of the basal cells; (2) the presence of irregular asymmetric mitotic figures; (3) individual cell keratinization, and (4) "Bowen's cell" with its amitotic, irregular clumped nucleus and wide bordered cytoplasm. The superficial basal cell epithelioma has the following histologic characteristics: (1) there are multicentric areas of proliferation of mature basal cells, some of which are cuboidal and others spindle-shaped; (2) these proliferating basal cells contain larger darker nuclei than the normal basal cells; (3) prickles are absent between the cells; (4) a few mitotic figures are present; (5) there is complete absence of amitotic figures.

As is the case in any tumor, the composition cannot be known unless histologic examination is performed. Occasionally a clinically diagnosed basal cell carcinoma turns out to be a squamous cell carcinoma histologically. In like manner, a clinical superficial basal cell epithelioma has been diagnosed intra-epidermal prickle cell carcinoma histologically. This was the situation in Case 8 in Dr. Harding's paper. There have been cases of intra-epidermal basal and intra-epidermal squamous (prickle) cell carcinoma side by side in the same section of tissue. This has been observed similarly in a section of basosquamous cell carcinoma. These intra-epidermal lesions may be named intra-epidermal basosquamous cell carcinoma.

The frequency with which arsenical ingestion is associated with subsequent occurrence of superficial epitheliomatosis is more than a coincidence. The stimulating effect of arsenic on the epidermis is observed frequently. It is readily conceivable that hyperplasia may progress to neoplasia which is then an irreversible process.

The "so-called recurrence" in the author's Case 4 certainly emphasizes the multicentric origin of these lesions. It is probably based on the multiple areas of sensitization to carcinogenic stimuli in the epidermis. It may also be due to embryonic structural rests which suddenly begin to proliferate and recapitulate in a disorderly manner. This results in the formation of an epidermal neoplasm of indeterminate origin.

Some observers claim that superficial basal cell epithelioma is relatively benign. The intra-epidermal prickle (squamous) cell carcinoma is a malignant lesion. It eventually breaks through the epidermis and metastasizes. Therefore, only by histologic examination can one conscientiously give proper treatment and prognosis.

We can only theorize why superficial basal cell epitheliomas occur on the covered skin of the body. Anatomically, the epidermal ridges and the follicle apparatus are quite superficial in these areas. Some of these lesions histologically do resemble embryonic hair follicle buds, as proposed by Foot in his studies of adnexal carcinoma of the skin.

I agree with Dr. Harding's treatment of these lesions—destruction by whatever modality fits the particular case best.

Radioreistance, as regards roentgen ray therapy, I think has been over-emphasized. Failures of cure in superficial basal cell epithelioma following this form of therapy may be recurrences, resulting in the manner mentioned in Case 4 following excision. Mohs' work has shown that recurrence is most frequently due to incomplete removal or to too shallow or too narrow an area of treatment, rather than to radioreistance of the tissue.